

Appln No. 10/000,141

Amdt date April 7, 2004

Reply to Office action of January 7, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1. (Currently Amended) A thermally tuned laser array comprising:

an array of lasers, each laser comprising:

a substrate, a waveguide, and an active region ~~between the substrate and~~ in the waveguide;

an electrical contact ~~on~~ coupled to the substrate, the substrate being at a substrate potential;

a resistive element ~~metal-layer~~ in thermal contact with the waveguide;

a first electrical contact ~~on~~ coupled to the ~~metal layer~~ resistive element and the waveguide, whereby application of a first potential to the first electrical contact causes the laser to lase; and

~~a second electrical contact on the~~ resistive element metal-layer, being coupled to a second electrical contact, whereby application of a second potential to the second electrical contact causes a current to flow between the first electrical contact and the second electrical contact, thereby heating the laser.

Claim 2. (Currently Amended) The thermally tuned laser array of claim 1 wherein a dielectric separates the ~~second electrical contact~~ resistive element and the waveguide.

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Claim 3. (Currently Amended) The thermally tuned laser array of claim 2 wherein the dielectric separates the ~~metal layer~~ resistive element and the waveguide at locations other than substantially about the first electrical contact.

Claim 4. (Previously Presented) The thermally tuned laser array of claim 3 wherein the waveguide is formed of a ridged InP cladding layer containing a grating.

Claim 5. (Currently Amended) The thermally tuned laser array of claim 4 wherein the ridged InP cladding layer has a top surface, with the resistive element ~~metal layer~~ in thermal contact with the top surface.

Claim 6. (Previously Presented) The thermally tuned laser array of claim 5 further comprising a thermoelectric (TE) cooler thermally coupled to the substrate.

Claim 7. (Cancelled)

Claim 8. (Currently Amended) The thermally tuned laser array of claim ~~7~~ 6 wherein at least some of the lasers in the array of lasers lase at different wavelengths.

Claim 9. (Cancelled)

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Claim 10. (Currently Amended) The thermally tuned laser array of claim 8 wherein each resistive element is coupled to the same second electrical contact ~~is~~ so as to be tied to the same potential.

Claims 11-14. (Cancelled)

Claim 15. (Currently Amended) A method of thermally tuning a thermally tuned laser array, each laser of the laser array having a[n] resistive element ~~metal layer~~ atop each laser and a substrate, the method comprising:

forward biasing ~~each~~ a selected laser, the forward biasing ~~by~~ placing at least a portion of the resistive element ~~metal layer~~ for the selected laser at a potential above the substrate, the forward biasing ~~to cause~~ causing the selected laser to emit light; and

generating a current in the resistive element ~~for the selected laser~~ ~~metal layer~~ by placing at least a second portion of the resistive element ~~metal layer~~ at a potential different than the potential above the substrate, whereby heat is produced in the resistive element ~~metal layer~~.

Claim 16. (Original) The method of claim 15 wherein the substrate is at a substrate potential, and the difference between the substrate potential and the potential above the substrate is significantly greater than the difference between the potential above the substrate and the potential different than the potential above the substrate.

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Claims 17-41. (Cancelled)

Claim 42. (Currently Amended) A thermally tuned laser array comprising:

an array of lasers on a substrate;

means for providing a drive signal to lasers making up the array of lasers;

means for providing a heating signal to lasers making up the array of lasers via a single heater contact coupling each laser in the array of lasers, the heating signal and the drive signal in conjunction resulting in heating of a selected laser in the array of lasers.

Claim 43. (New) The thermally tuned laser array of claim 1, wherein the second electrical contact is coupled to the resistive element of each laser in the array of lasers.

Claim 44. (New) The thermally tuned laser array of claim 2 further comprising a metal layer under the dielectric, the second metal layer being coupled to the waveguide and the first electrical contact.

Claim 45. (New) The thermally tuned laser array of claim 1, wherein the resistive element comprises a metal layer.

Claim 46. (New) The thermally tuned laser array of claim 1, wherein the resistive element comprises a thin film.

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Claim 47. (New)        The method of claim 15 wherein the resistive element comprises a metal layer.

Claim 48. (New)        The method of claim 15 wherein the resistive element comprises a thin film.

Claim 49. (New)        The method of claim 15 wherein in each laser, a dielectric separates the resistive element and the laser.

Claim 50. (New)        The thermally tuned laser array of claim 42 wherein the means for providing a heating signal applies the heating signal to all of the lasers in the array of lasers.

Claim 51. (New)        The thermally tuned laser array of claim 42 wherein the heating signal allows current to flow only through lasers in the array of lasers receiving the drive signal, and reverse biases lasers in the array of lasers not receiving the drive signal.

Claim 52. (New)        The thermally tuned laser array of claim 1 wherein the first potential is greater than the substrate potential and the second potential is less than the first potential.

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Claim 53. (New) The thermally tuned laser array of claim 52 wherein the second potential is less than the substrate potential.

Claim 54. (New) The thermally tuned laser array of claim 10 wherein the first potential is greater than the substrate potential and the second potential is less than the first potential.

Claim 55. (New) The thermally tuned laser array of claim 54 wherein the second potential is less than the substrate potential.

Claim 56. (New) The method of claim 15 wherein generating a current in the resistive element for the selected laser by placing at least a second portion of the resistive element at a potential different than the potential above the substrate comprises placing an electrical contact coupled to second portions of resistive elements of each laser at a potential different than the potential above the substrate.

Claim 57. (New) The method of claim 56 wherein the substrate is at a substrate potential, and the potential different than the potential above the substrate comprises a potential lower than the substrate potential, whereby lasers in the array of lasers other than the selected laser are reverse-biased.